



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/572,573	11/07/2006	Kiminobu Hirata	050203-0144	2809
31824 7590 06/12/2008 MCDERMOTT WILL & EMERY LLP 18191 VON KARMAN AVE. SUITE 500 IRVINE, CA 92612-7108			EXAMINER EDWARDS, LOREN C	
			ART UNIT 3748	PAPER NUMBER
			MAIL DATE 06/12/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/572,573

Applicant(s)

HIRATA ET AL.

Examiner

Loren C. Edwards

Art Unit

3748

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8-10 and 12-16 is/are rejected.
- 7) ☒ Claim(s) 7 and 11 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 March 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-85/86)
- Paper No(s)/Mail Date 3/17/06, 9/11/06, 4/10/08
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date: ____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 3/17/06 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the examiner has considered the information disclosure statement.
3. The information disclosure statement (IDS) submitted on 9/11/06 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the examiner has considered the information disclosure statement.
4. The information disclosure statement (IDS) submitted on 4/10/08 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the examiner has considered the information disclosure statement.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Tost (U.S. 6,192,677). Tost discloses an engine exhaust emission purification apparatus comprising: a reduction catalytic converter (Fig. 1, No. 6) disposed in an

engine exhaust system (Fig. 1, No. 4) to reduce and purify nitrogen oxides by using a liquid reducing agent; an injection nozzle (Fig. 1, No. 14) that supplies by injection the liquid reducing agent (Fig. 1, No. 7) to a flow of an exhaust emission upstream the reduction catalytic converter; and a temperature maintenance device (Fig. 1, No. 174) for maintaining a temperature of at least a part of a liquid reducing agent supply system including the injection nozzle and piping of the injection nozzle at a temperature lower than a boiling point of a solvent of the liquid reducing agent or equal to or higher than a melting point of dissolved matter (Claim 1).

7. With regards to claim 2, Tost discloses the engine exhaust emission purification apparatus of claim 1, as described above, and further wherein the temperature maintenance device is configured by a heat insulating member (Fig. 1, No. 173) disposed between the exhaust system and a flange (Fig. 2, No. 44) for attaching the injection nozzle to the exhaust system.

8. Claims 1 and 3 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Weigl (U.S. 6,513,323). Weigl discloses an engine exhaust emission purification apparatus comprising: a reduction catalytic converter (Fig. 1, No. 8) disposed in an engine exhaust system (Fig. 1, No. 4) to reduce and purify nitrogen oxides by using a liquid reducing agent; an injection nozzle (Fig. 2, No. 15) that supplies by injection the liquid reducing agent (Fig. 1, No. 10) to a flow of an exhaust emission upstream the reduction catalytic converter; and a temperature maintenance device (Fig. 2, No. 20, 21, 198, and 211) for maintaining a temperature of at least a part of a liquid reducing agent supply system including the injection nozzle and piping of the injection nozzle at a

temperature lower than a boiling point of a solvent of the liquid reducing agent or equal to or higher than a melting point of dissolved matter (Abstract).

9. With regards to claim 3, Weigl discloses the engine exhaust emission purification apparatus of claim 1, as described above, and further wherein the temperature maintenance device is configured by radiating fins (Fig. 2, No. 211) provided to be juxtaposed to a flange (Fig. 2, No. 191) for attaching the injection nozzle to the exhaust system.

10. Claims 1, 4, and 8 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Stutzenberger (U.S. 5,605,042). Stutzenberger discloses an engine exhaust emission purification apparatus comprising: a reduction catalytic converter (Fig. 1, No. 2) disposed in an engine exhaust system (Fig. 1, No. 1) to reduce and purify nitrogen oxides by using a liquid reducing agent; an injection nozzle (Fig. 1, No. 4) that supplies by injection the liquid reducing agent (Fig. 1, No. 11) to a flow of an exhaust emission upstream the reduction catalytic converter; and a temperature maintenance device (Fig. 1, Nos. 7 and 9) for maintaining a temperature of at least a part of a liquid reducing agent supply system including the injection nozzle and piping of the injection nozzle at a temperature lower than a boiling point of a solvent of the liquid reducing agent or equal to or higher than a melting point of dissolved matter (Col. 2, Lines 3-20).

11. With regards to claim 4, Stutzenberger discloses the engine exhaust emission purification apparatus of claim 1, as described above, and further wherein the temperature maintenance device is arranged to route a conduit of engine coolant (Col. 2, Lines 58-67) to a flange (Fig. 1, No. 8) for attaching the injection nozzle to the

Art Unit: 3748

exhaust system to thereby cause heat exchange between the flange and the engine coolant.

12. With regards to claim 8, Stutzenberger discloses the engine exhaust emission purification apparatus of claim 1, as described above, and further wherein the temperature maintenance device is arranged to lead a conduit for the engine coolant (Col. 2, Lines 58-67) to at least a part of the liquid reducing agent supply system (Fig. 1, No. 8) to thereby cause heat exchange between the liquid reducing agent supply system and the engine coolant.

13. Claims 1, 4-6, 8-10, and 16 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Hofmann et al. (U.S. 5,884,475). Hofmann discloses an engine exhaust emission purification apparatus comprising: a reduction catalytic converter (Fig. 3, C) disposed in an engine exhaust system (Fig. 3, No. 42) to reduce and purify nitrogen oxides by using a liquid reducing agent; an injection nozzle (Fig. 3, No. 24) that supplies by injection the liquid reducing agent (Fig. 3, No. 4) to a flow of an exhaust emission upstream the reduction catalytic converter; and a temperature maintenance device (Fig. 3, No. 14) for maintaining a temperature of at least a part of a liquid reducing agent supply system including the injection nozzle and piping of the injection nozzle at a temperature lower than a boiling point of a solvent of the liquid reducing agent or equal to or higher than a melting point of dissolved matter (Col. 7, Lines 10-18).

14. With regards to claim 4, Hofmann discloses the engine exhaust emission purification apparatus of claim 1, as described above, and further wherein the temperature maintenance device is arranged to route a conduit of engine coolant (Col.

7, Line 62 – Col. 8, Line 23) to a flange (Fig. 3, where No. 24 meets No. 42) for attaching the injection nozzle to the exhaust system to thereby cause heat exchange between the flange and the engine coolant.

15. With regards to claim 5, Hofmann discloses the engine exhaust emission purification apparatus of claim 4, as described above, and further comprising a nozzle temperature detecting device (Fig. 4, No. 47) for detecting a nozzle temperature of the injection nozzle, and a circulation control device for circulating or intercepting the engine coolant in the conduit based on the nozzle temperature detected by the nozzle temperature detecting device (Col. 7, Line 62 – Col. 8, Line 50).

16. With regards to claim 6, Hofmann discloses the engine exhaust emission purification apparatus of claim 5, as described above, and further wherein the circulation control device circulates the engine coolant when the nozzle temperature is equal to or higher than the boiling point of the solvent of the liquid reducing agent or lower than the melting point of the dissolved matter (Col. 7, Line 62 – Col. 8, Line 23).

17. With regards to claim 8, Hofmann discloses the engine exhaust emission purification apparatus of claim 1, as described above, and further wherein the temperature maintenance device is arranged to lead a conduit for the engine coolant (Col. 7, Line 62 – Col. 8, Line 23) to at least a part of the liquid reducing agent supply system (Fig. 4, No. 44) to thereby cause heat exchange between the liquid reducing agent supply system and the engine coolant.

18. With regards to claim 9, Hofmann discloses the engine exhaust emission purification apparatus of claim 8, as described above, and further comprising: a nozzle

temperature detecting device (Fig. 4, No. 47) that detects a temperature of the nozzle of the injection nozzle; and a circulation control device for controlling circulation or interception of the engine coolant in the conduit, based on the temperature of the nozzle detected by the nozzle temperature detecting device (Col. 7, Line 62 – Col. 8, Line 50).

19. With regards to claim 10, Hofmann discloses the engine exhaust emission purification apparatus of claim 9, as described above, and further wherein the circulation control device circulates the engine coolant when the temperature of the nozzle is equal to or higher than the boiling point of the solvent of the liquid reducing agent or lower than the melting point of the dissolved matter (Col. 7, Line 62 – Col. 8, Line 23).

20. With regards to claim 12, Hofmann discloses the engine exhaust emission purification apparatus of claim 1, as described above, and further wherein the temperature maintenance device comprises a heating device (Fig. 3, No. 38) that heats at least a part of the liquid reducing agent supply system and a heating control device (Fig. 3, No. 100) that control the heating device.

21. With regards to claim 13, Hofmann discloses the engine exhaust emission purification apparatus of claim 12, as described above, and further wherein the heating device comprises a heater (Fig. 3, No. 38).

22. With regards to claim 14, Hofmann discloses the engine exhaust emission purification apparatus of claim 12, as described above, and further wherein a heating insulating member is disposed around at least a part of the liquid reducing agent supply system and the heating device (Fig. 3, No. 14 – Outside wall).

23. With regards to claim 15, Hofmann discloses the engine exhaust emission purification apparatus of claim 12, as described above, and further comprising a nozzle temperature detecting device (Fig. 4, No. 47) that detects a temperature of the nozzle of the injection nozzle, wherein the heating control device controls actuation of the heating device, based on the temperature of the nozzle detected by the nozzle temperature detecting device (Col. 8, Lines 24-50).

24. With regards to claim 16, Hofmann discloses the engine exhaust emission purification apparatus of claim 12, as described above, and further wherein the heating control device heats at least a part of the liquid reducing agent supply system to a temperature equal to or higher than the melting point of the dissolved matter of the liquid reducing agent by using the heating device when the injection-supply of the liquid reducing agent is stopped (Col. 7, Line 62 – Col. 8, Line 23).

Allowable Subject Matter

25. Claims 7 and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Loren C. Edwards whose telephone number is (571) 272-2756. The examiner can normally be reached on M-TH 5:30-4.

Art Unit: 3748

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Denion can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Thomas E. Denion/
Supervisory Patent Examiner, Art Unit 3748

/Loren Edwards/
(571) 272-2756